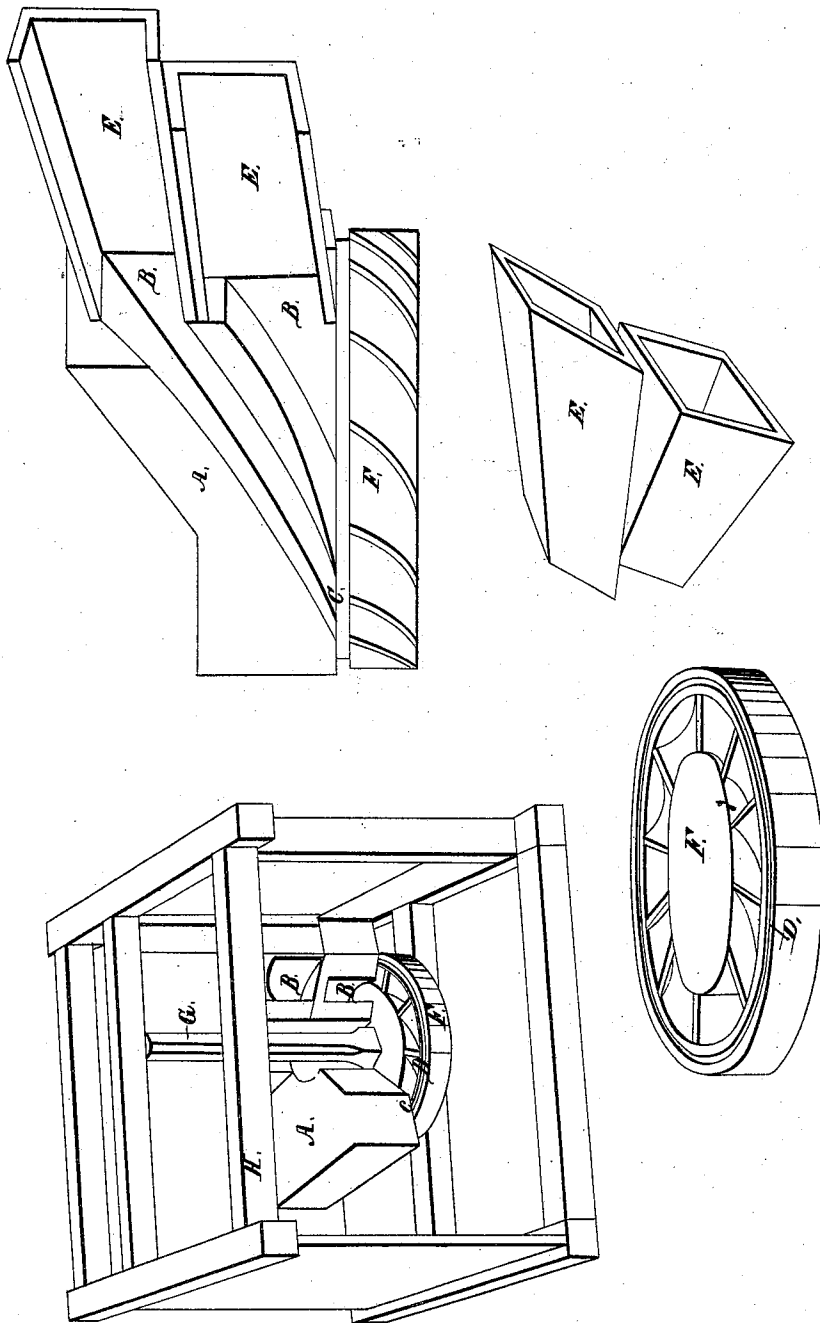


*D. B. Napier,*

*Water Wheel.*

*N<sup>o</sup> 204.*

*Patented May 22, 1837.*



# UNITED STATES PATENT OFFICE.

DAVID B. NAPIER, OF CASEY COUNTY, KENTUCKY.

## CONSTRUCTION OF AND MODE OF APPLYING WATER TO TUB-WHEELS.

Specification of Letters Patent No. 204, dated May 22, 1837.

*To all whom it may concern:*

Be it known that I, DAVID B. NAPIER, of the county of Casey and State of Kentucky, have invented a new and Improved Mode of Applying Water to Tub-Mills; and I do hereby declare that the following is a full and exact description, to wit:

The nature of my improvement consists in the application of water to tub-mill wheels by two chutes through a block or blocks graduating them so as to keep the column of water solid and acting upon the wheel by pressure also the band to prevent the escape of water.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

The construction of the mill is after the manner of those in common use, with this exception: I have two chutes B the one passing immediately over the other—the water applied by the first chute at right angles with the buckets, and runs one third around the wheel; at the end of which the other chute commences and passes another third, acting on two thirds of the wheel at the same time, or more if necessary. The chutes are cut in a block of timber A of proper size, to wit, for a wheel of three feet in diameter—the block should be four feet long and thirty inches by twenty for a three feet stone and six feet head. The columns should be seven by sixteen inches, to wit, on the perpendicular line they should be sixteen inches, and on the horizontal line they should be seven inches—and the chutes should graduate to two thirds of the seven inches where they terminate. The trunks E are separate at the upper end, and inserted in the block of timber at the commencement of the chutes where the water makes its application and passes into the penstock between posts two feet apart. The trunks do not pass immediately over each other—but separate on the inside the penstock and at the end and are two feet square at the upper end for the purpose of drawing the gates with ease. The wheel at the outer end of the buckets is precisely the same in diameter as that of the stone—and the rimming is made three inches thick for the purpose of receiving an iron band C inserted into the block of timber. The band to go two thirds or more round the wheel. The wheel one and a half inch wide by one fourth of an inch thick—made rough on one edge like that of a saw, and on each side in the form of a file. The band inserted in the block one and a half inch from the

outer circle that forms the column of water—made fast in a circular groove cut to fit it three fourths of an inch deep which would leave three fourths of an inch of the band to go into the wheel—the band is for the purpose of preventing the escape of the water between the block and the wheel thereby saving all the water in a proper position to act on the wheel. The buckets are made in the wheel so as to pass two thirds of the water discharged through the two chutes thereby forming a solid column of water two hundred and twenty four inches, two thirds of which is continually passing through the wheel—there are eight buckets in the wheel each three feet in diameter and seven by three and a half inches where the water is discharged.

A stone of four feet and under may be propelled by tub wheels; but over four feet does not answer well unless on large streams with high heads. A mill stone three and a half feet in diameter and a head of ten feet water requires grooves in the block seven by five inches. A three feet stone and a four feet head require seven and a half inches by fifteen. Should the block not be large enough to form the chutes, pin pieces of timber to them with a groove in them to form a part of the upper groove. The block is then placed and fastened on bearers of timber erected on each side of the wheel. The wheel being well trained on the shaft, and the spindle made true in the shaft—let down the wheel so the iron band in the block will not touch it—then place the block with the circles of the wheel and block—fix in the trunks and gates having the shaft exactly plumb—raise the gates just enough to let a sufficient quantity of water on the wheel to set it in motion; then raise the wheel gradually, the iron band will then cut a groove on the running of the wheel, this process should be continued until the wheel comes up to the block, then the wheel when ready for grinding is sunk one fourth of an inch below the block.

What I claim as my improvement and desire to secure by Letters Patent is the application of water to tub mill wheels by two chutes through a block or blocks—graduating them so as to keep the column of water solid and acting upon the wheel by pressure also the band to prevent the escape of water.

D. B. NAPIER.

Witnesses:

W. SIMPSON,  
M. D. HARDIN.